REMARKS

I. Discussion of Amendments

Claim 1 has been amended to incorporate the limitation of claim 2 to limit the phosphorus-containing ester to a phosphite ester. Claim 2 has been canceled. Claim 5, which formerly depended on Claim 2, has been amended to depend on Claim 1.

Claim 20 has been amended to specify that what is being claimed is a process to produce an ester or polyester. Basis can be found on page 7, lines 9-11. Claim 20 has also been amended to incorporate the limitation of claim 21 to limit the phosphorus-containing ester to a phosphite ester. Claim 21 has been canceled. Claims 22 and 23, which formerly depended on Claim 21, have been amended to depend on Claim 20.

Claim 35 has been amended to specify that what is being claimed is a process to reduce the formation of color in a polyester. Basis can be found on page 9, lines 24-25. Claim 35 has also been amended to incorporate the limitation of claim 36 to limit the phosphorus-containing ester to a phosphite ester. Claim 36 has been canceled. Claims 37 and 42, which formerly depended on Claim 36, have been amended to depend on Claim 35.

Claims 4, 18, 19, 22, 37 and 50 have been amended to correct the spelling error of triethylene for the correct spelling of triethylene. The correct spelling can also be found at page 5, line 20.

Claims 10-14, 28-30 and 42-43 have been amended to correct the grammar from "comprising" to "comprises".

Claims 4, 18, 19, 22, 37 and 50 have been amended to remove comma between "diylbis-" and "tetrakis" in the compound, [1,1'-biphenyl]-4,4'-diylbis-,tetrakis(2,4-bis(1,1-dimethylethyl)phenyl)ester.

II. Claims Analysis

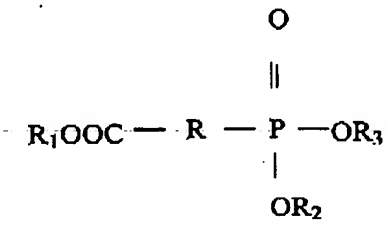
Applicant respectfully disagrees with Examiner's assertion that claims 20-50 are product by process claims. In claims 20-34, Applicant claims a new process to prepare an ester or polyester product. The process comprises contacting a carbonyl compound, such as an acid) with an alcohol, in the presence of a catalyst. In claims 35-50, Applicant claims a process to reduce the formation of color in a polyester. The process comprises contacting a carbonyl compound, (such as an acid) with an alcohol,

optionally in the presence of a catalyst. To clarify, Applicant has amended claims 20 and 35 to more specifically recite that what is being claimed is a process to produce an ester or polyester or a process to reduce the formation of color in a polyester. Bases can be found on page 7, lines 9-11 and on page 9, lines 24-25, respectively. The process claims specify particular features of the process, that is, reactive components, which, in combinations as specified, produce an ester or polyester having a low color.

III. Rejection under 35 U.S.C. § 103

Claims 1-15, 18-32, 35-45, and 48-50 were rejected under 35 U.S.C. § 103 as being obvious over Jeon, et al. (U.S. 6,342,579) in view of Kakizawa (U.S. 5,844,066). Applicant respectfully requests reconsideration of this application in view of the amendments and remarks presented herein.

Jeon, et al. disclose a process to produce polyester resin by polycondensation in the presence of a titanium catalyst and a carboxy phosphonic acid-type compound stabilizer. The stabilizer has the formula of



where R_1, R_2, and R_3 can be the same or different and are selected from the group consisting of hydrogen, alkyl group, cycloalkyl group and aryl group and R is selected from the group consisting of alkylene groups, cycloalkylene groups and arylene groups. The stabilizer is added to improve color and reactivity (see column 3, lines 9-12). Thus, Jeon, et al. disclose a composition comprising an esterified reaction product, a polycondensation catalyst, which can be titanium, a stabilizer as specified above, and a toning agent, which can be cobalt. Jeon et al., fail to disclose use of a chelating agent or complexing agent.

By way of example, Jeon, et al. compare use of a carboxy phosphonic acid-type compound, triethylphosphonoacetate, with phosphoric acid, triethylphosphate and distearylpentaerythroldiphosphite in a polycondensation process. In the

examples, phosphoric acid is shown to have better reactivity (higher I.V.) color (lower b value) than the diphosphite. (See, Jeon, et al., Tables 1 and 2.)

Kakizawa discloses a process to produce a lactic acid-base polyester comprising adding a chelating agent, such as hydroxycarboxylic acid, alkanolamine or aminocarboxylic acid. In Kakizawa, the addition of the chelating agent inhibits the break of lactic acid from a lactic acid-containing polymer, which is catalyzed by the polymerization catalyst (see, column 2, lines 4-6 and lines 55-63). Thus, the effect of the chelating agent is to deactivate the polymerization catalyst. It is further noted in column 2, lines 33-36, that addition of certain phosphorous compounds are unable to "thoroughly deactivate the catalyst used." Therefore, Kakizawa teaches chelating agents deactivate polymerization catalysts.

In contrast, in the present invention, the catalyst composition of Applicant's amended claims comprises a titanium compound, a phosphite ester and a complexing agent. Jeon et al. teach phosphite is inferior for a phosphorous-compound additive (phosphite provides poorer color and slower reaction, based on lower polymer I.V., than phosphoric acid according to Jeon, et al.) for improving color in polyester. Kakizawa suggest a chelating agent deactivates a polymerization catalyst. Thus, it would not be obvious to one skilled in the art to combine a phosphorous compound shown to have inferior effects to phosphoric acid with a chelating agent with a purpose to deactivate polymerization catalyst to produce a catalyst, which, when used in an esterification process provides faster rate and better color than phosphoric acid.

Applicant's specification and examples support superior results for the catalyst and process of Applicant's claims. For example, in Tables 1 and 2, it can be seen by comparing Catalyst 3 and Catalyst 5, which differ only in that Catalyst 5 has no phosphoric acid added, Catalyst 5 has faster rate (117 minutes reaction) than Catalyst 3 (139 minutes reaction) and Catalyst 5 has better color ($b^* = 7.51$) than Catalyst 3 ($b^* = 8.55$). From Table 3, it can be seen that b^* color values in the presence of phosphite are 3.06 or less whereas b^* color values without phosphite are 4.64 or higher.

IV. Allowable Subject Matter

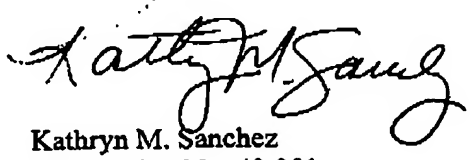
Claims 16-17, 33-34 and 46-47 were objected to as being dependent on a rejected base claim, but allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims. Based on the foregoing amendments and arguments, Applicant asserts these claims are now patentable.

V. Conclusions

In view of the amendments and remarks herein, Applicant respectfully maintains that Claims 1, 3-20, 22-35, and 37-50 are patentable over the cited art. Therefore, Applicant respectfully requests that the rejections be withdrawed.

Respectfully submitted,



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